Claims

What is claimed is:

[c1] A system for tracing a simulation design comprising:

an encoded assertion asserting a value of a node of the simulation design at a point in a simulation;

a fanin cone detection facility configured to obtain a fanin cone for the encoded assertion;

a waveform trace facility configured to obtain waveform data comprising a history of signal values for the node; and

a simulation toolkit configured to obtain node data using the fanin cone and the waveform data.

[c2] The system of claim 1 further comprising:

a connectivity database comprising a connectivity description for the node.

[c3] The system of claim 2, wherein the connectivity database is used to obtain the fanin cone.

[c4] The system of claim 3, wherein the connectivity database resides within a simulation environment.

[c5] The system of claim 1, wherein the fanin cone detection facility is configured to obtain the fanin cone prior to execution of the simulation environment.

[c6] The system of claim 1, wherein the waveform trace facility is configured to obtain the waveform data prior to execution of the simulation environment.

[c7] The system of claim 1, wherein the node data is obtained during execution of the simulation.

[c8] The system of claim 1, wherein the node data is obtained using hooks into a simulation image.

[c9] The system of claim 1, wherein the fanin cone detection facility provides fanin cone information in a binary format.

[c10] The system of claim 9, wherein the binary format facilitates a third party format of the node data.

[c11] The system of claim 1, wherein the assertion is a sequential assertion.

[c12] The system of claim 11, wherein the simulation design comprises a specification for a compiler to understand the sequential assertion.

[c13] The system of claim 1, wherein the encoded assertion is modified while the simulation is executing.

[c14] A method of tracing a simulation design comprising:

obtaining an assertion for a simulation image of the simulation design;

generating hooks into the simulation image using a simulation toolkit to obtain an instrumented simulation image, wherein the hooks are generated based on the assertion, a fanin cone, and waveform data; and

executing the instrumented simulation image in a simulation environment to obtain node data from the assertion.

[c15] The method of claim 14, further comprising:

debugging a failure of the assertion using the node data.

[c16] The method of claim 15, wherein the debugging is performed while simulation is executing.

[c17] The method of claim 14, further comprising:

modifying the assertion during execution of the simulation environment.

[c18] The method of claim 14, wherein obtaining the fanin cone occurs prior to the execution of the simulation environment.

[c19] The method of claim 14, wherein obtaining the waveform data occurs prior to the execution of the simulation environment.

[c20] The method of claim 14, wherein obtaining the fanin cone comprises tracing the fanin cone using a connectivity database.

[c21] The method of claim 14, wherein the assertion is a sequential assertion.

[c22] The method of claim 21 further comprising:

generating a directive for the design to obtain a state device for the sequential assertion.

[c23] A computer system for tracing a simulation design comprising:

a processor;

a memory;

a storage device; and

software instructions stored in the memory for enabling the computer system to:

obtain an assertion for a simulation image of the simulation design;

generate hooks into the simulation image using a simulation toolkit to obtain an instrumented simulation image, wherein the hooks are generated based on the assertion, a fanin cone, and waveform data; and

execute the instrumented simulation image in a simulation environment to obtain node data from the assertion.

[c24]   The computer system of claim 23 further comprising:

software instructions to debug the failure of the assertion using the node data.

[c25]   The computer system of claim 23 further comprising:

software instructions to modify the assertion during the execution of the simulation.

[c26]   An apparatus for tracing a simulation design comprising:

means for obtaining an assertion for a simulation image of the simulation design;

means for generating hooks into the simulation image using a simulation toolkit to obtain an instrumented simulation image, wherein the hooks are generated based on the assertion, a fanin cone, and waveform data;

means for executing the instrumented simulation image in a simulation environment to obtain node data from the assertion; and

means for debugging the failure of the assertion using the node data.